



The Dry Farming Collaborative:

Co-creating the future of how we manage water on our farms

Amy Garrett

Small Farms Program

OSU Extension Service



Introduction

- Cropping options on land without water?
- Climate change
 - reduced snowmelt
 - increased temperatures
 - drought
- Vegetable growers using surface water for irrigation were cut off early during the 2015 growing season - Some as early as June!
- many new farmers have trouble finding land with unrestricted irrigation rights



What is dry farming?

- Crop production during a dry season like summers in the Willamette Valley in Oregon and Northern California
- Utilizes the residual moisture in the soil from the rainy season instead of depending on irrigation.



The Dry Farming Project

- Work to date
 - Case studies
 - Western Oregon
 - Northern California
 - Demonstration
 - Field Day
 - Sensory Evaluation
 - Preliminary Yield Data
 - Grant funding
 - Expand Demonstration
 - *Growing Resilience: Water Management Workshop Series*
 - Participatory Dry Farming Research
 - *Dry Farming Collaborative*



How Does Dry Farming Work?

- Starts with the soil!
 - Water-holding capacity
 - Clay
 - Organic matter - For each 1% increase in soil organic matter, soil water storage can increase by 16,500 gallons per acre-foot of applied water!
 - 4' of soil or more (Solomon)
 - Nutrient-rich
- Site selection
 - Plants as indicators
 - Web Soil Survey
 - Soil auger



128B—Veneta loam, 0 to 7 percent slopes

Map Unit Setting

National map unit symbol: 234m

Elevation: 300 to 800 feet

Mean annual precipitation: 40 to 60 inches

Mean annual air temperature: 52 to 54 degrees F

Frost-free period: 165 to 210 days

Farmland classification: All areas are prime farmland

Typical profile

H1 - 0 to 14 inches: loam

H2 - 14 to 39 inches: clay loam

H3 - 39 to 60 inches: clay

Properties and qualities

Slope: 0 to 7 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 36 to 72 inches

Frequency of flooding: None

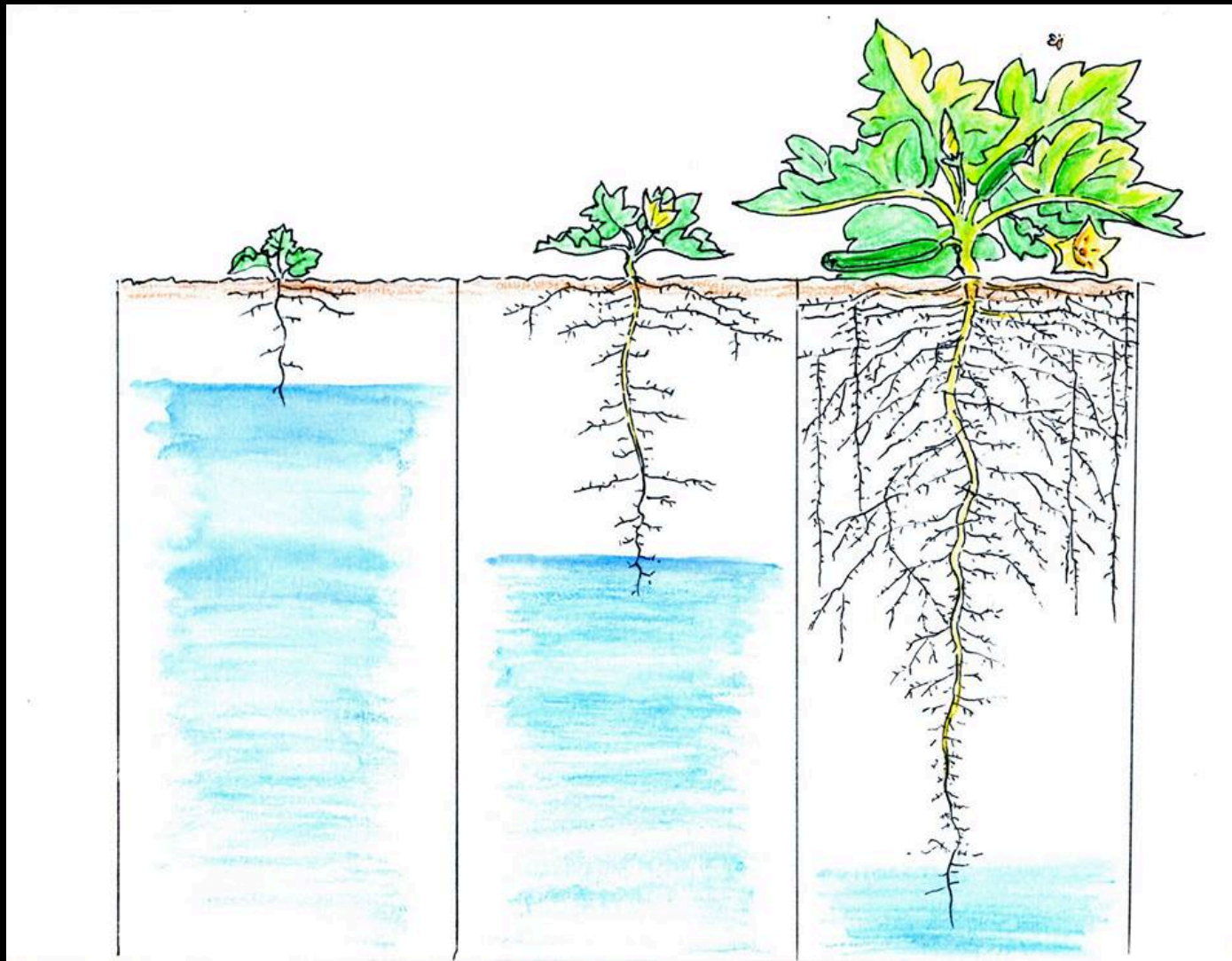
Frequency of ponding: None

Available water storage in profile: High (about 10.3 inches)

How Does Dry Farming Work?

- Soil preparation
 - Timing
- Planting technique
 - Plant when and where there is moisture
 - Increased plant spacing
 - Pressing soil around seed or transplant
 - Good seed soil contact
 - Creates capillary action wicking moisture to the surface to help seed germinate and get established
 - Pre-soaking seed (Deppe)
- Surface protection
 - 'Dirt mulch'





By Moria Peters

Roots Extend To Edge Of Water-Saturated Zone

Crop/Variety Selection

- Tomatoes
- Potatoes
- Watermelons
- Cantaloupes
- Winter squash
- Zucchini
- Dry Beans
- Corn
- Orchard crops
- Grapes



2016 Dry Farming Project Plan

- 3 Demonstration Sites
 - Aurora
 - Corvallis
 - Central Point
- *Growing Resilience: Water Management Workshop Series*
- Participatory Dry Farming Research

		Treatments				
		Irrigated	Low Irrigation	Dry Farmed	Dry Farmed with Biochar Compost	
Crops	Potatoes					Yukon Gold
						Yellow Finn
	Winter Squash					Zeppelin Delicata
						Stella Blue
	Tomatoes					Early Girl
						Big Beef
	Melon					Eel River
						Christmas Watermelon

Dry Farming Collaborative



Group of growers, extension educators, plant breeders, and agricultural professionals partnering to increase knowledge and awareness of dry farming management practices with a hands-on participatory approach.

Dry Farming Collaborative

- 10 main sites hosting trials in 2016 throughout Western Oregon
- 180+ members in Facebook Group
- 80+ members on email list
- Data Collection
 - Soil testing (5' cores)
 - Yield
 - Sensory Evaluation
- Winter Growers' Meeting (Dec 2016)
- Presented at multiple farm conferences this winter

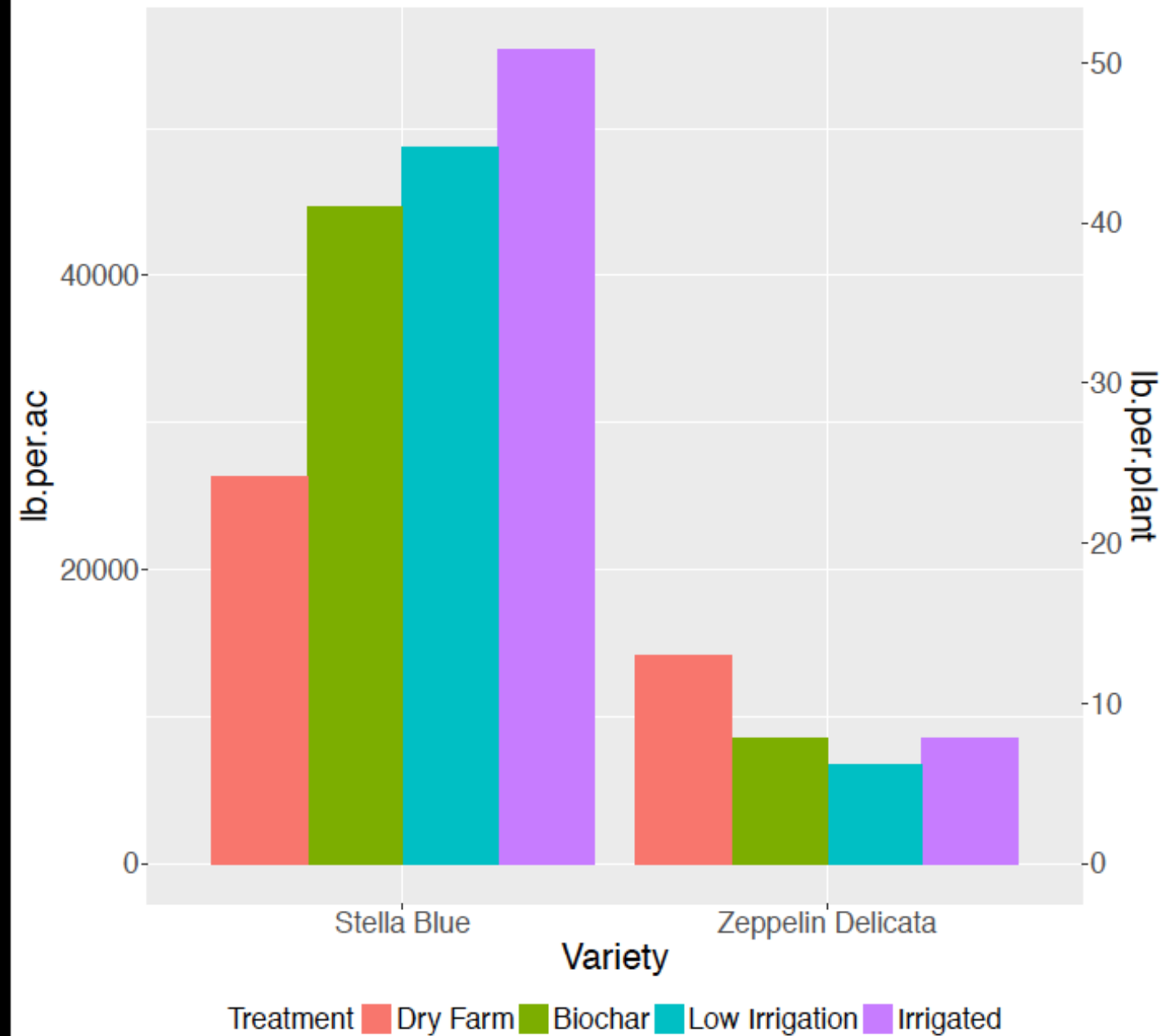


Gathering Together Farm 2016 Dry Farm Trial



Squash Marketable Yield

Oak Creek OSU Demo 2016



AnOvation Group LLC

'Dark Star' Zucchini

Corvallis, OR



July 6, 2015



July 15, 2015



July 27, 2015



September 25, 2015

New Moon Organics -
Shively, Ca



August 18, 2015

Relative Soil Productivity Ratings by Classification

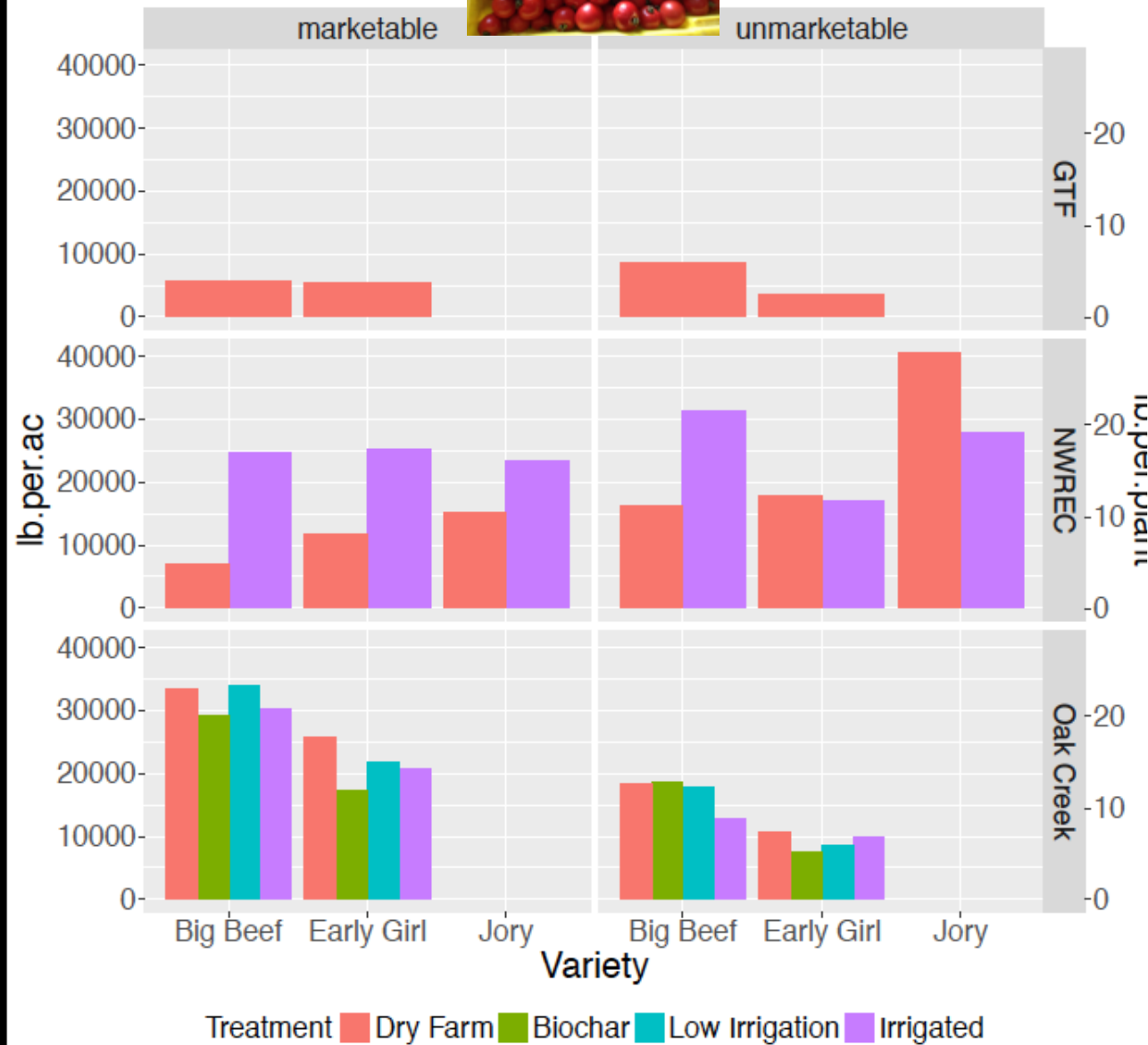
Soil	Native Productivity	Amendments	Drainage	Irrigation	Max Dry	Max Irrigated	Farm
Chapman	69	+9	0	24	76	100	Harcombe Farm
Chehalis	72	+5	0	+20	77	97	Gales Meadow Farm
Coburg	60	+5	+8	+20	73	93	Gathering Together Farm
Dayton	10	+22	+4	+27	36	63	Oak Creek
Helvetia	57	+5	+8	+20	70	90	Berry Lost
Latourell	70	+10	0	+20	80	100	North Willamette
McBee	55	+5	+9	+20	72	92	Gales Meadow Farm
Quatama	65	+5	+9	+20	79	99	North Willamette
Redbell	55	+5	+18	+20	73	93	Gathering Together Farm
Willamette	75	+5	0	+20	80	100	Oak Creek
Woodburn	65	+5	+8	+16	78	94	Oak Creek, Gowan Farm

Reference OSU 1992 Agricultural Ratings for Soils of the Willamette Valley, EC 1105 Oregon State University Extension.

(Huddleston EC 1105)
Andy Gallagher – Red Hill Soils



Tomato Yield Selected Sites



Soil Type	Native Prod.	Max Dry
Coburg Redbell	60 55	73 73
Latourell Quatama	70 65	80 79
Willamette Woodburn	75 65	80 78

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2017 DFC Replicated Variety Trials

- **Tomatoes:** Early Girl, Dirty Girl, Stupice, Big Beef, Perfect Rogue, Cour di Bue
- **Winter Squash:** Zeppelin Delicata, Stella Blue, Lower Salmon River, Hidatsa, Little Gem, Winter Sweet
- **Zucchini:** Dark Star, Costata Romanesco, Goldini Zucchini, Rugosa Friulana, Genovese
- **Melon:** Eel River, Rich Sweetness, Sweet Freckles, Piel de Sappo,
- **Potatoes:** Russet Norkotah, Red Pontiac, Bintje, Chieftain, Ozette, Desiree, Yukon Gold
- **Beans:** Beefy Resilient, Volga German, Whipple, Early Warwick
- **Corn:** Cascade Ruby, Painted Mountain, Papas Red, Open Oak Party Mix Dent Corn, Magic Manna

Dry Farming Collaborative

Next Steps.....

- Nearly 30 sites have signed up to host trials this year
 - Emphasis on replication across sites
- Develop Dry Farming page on OSU Small Farms website to be a resource hub for dry farming in our region
- Initiate dry farming extension publication series
 - Site assessment and selection
 - Soil preparation and planting
- Initiate participatory plant breeding project for dry farmed systems.
- Create data repository and user-interface to streamline data collection and analysis – input, search, visualization, statistics
 - Allow for different levels of involvement – Replication and/or Experimental
- Develop a guide on to how to put together participatory climate adaptation research projects for others in our region and beyond.

Recommendations for those new to dry farming....

- Select site with deep soil and good water-holding characteristics.
- Start small and expand on your successes!
- Join the Dry Farming Collaborative
 - Email List – to join contact Amy Garrett
 - Facebook Group – open to the growers, extension educators, plant breeders, and agricultural professionals





For more info visit:

<http://smallfarms.oregonstate.edu/dry-farming-demonstration>

Or join the **Dry Farming Collaborative** group on Facebook



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Amy.garrett@oregonstate.edu



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